CLAIMS

What is claimed is:

1. A scene change detector comprising:

first and second histogram detection units computing histograms from input first and second color signals, respectively;

a cross correlation coefficient calculation unit calculating a correlation value between the first and second histograms computed by the first and second histogram detection units, respectively; and

a decision unit outputting a scene change signal by comparing the correlation value with a threshold.

2. The scene change detector according to claim 1, further comprising:

first and second frame buffers storing two image frame data, respectively, to detect a scene change; and

first and second color space conversion units converting the image frame data stored in the first and second frame buffers into the first and second color signals to be outputted to the first and second histogram detection units, respectively.

3. The scene change detector according to claim 2, wherein the first and second color signals are luminance color signals.

4. The scene change detector according to claim 2, wherein the first and second color signals are chroma color signals.

5. The scene change detector according to claim 1, wherein the first and second histogram detection units quantize the input first and second color signals to signal bands, respectively, each calculate the number of pixels having the same values of the quantized first and second color signals with respect to all pixels in a predetermined frame region, and calculate the first and second histograms by standardizing the calculated respective numbers, respectively.

6. The scene change detector according to claim 1, wherein the decision unit outputs the scene change signal when the correlation value is less than the threshold.

7. The scene change detector according to claim 6, wherein the threshold is in a range of 0.9 to 0.95 inclusive.

8. A scene change detector comprising:

first and second histogram detection units calculating first and second histograms from input first and second color signals, respectively;

first and second average/maximum calculation units calculating average values and maximum values from the first and second histograms calculated at the first and second histogram detection units, respectively;

a comparison unit outputting an average signal by comparing a first difference between the first and second average values calculated from the first and second average/maximum calculation units, respectively, with a first threshold, and a maximum signal by comparing a second difference between the first and second maximum values calculated from the first and second average/maximum calculation units, respectively, with a second threshold;

first and second filters filtering the first and second histograms to output the filtered first and second histograms having suppressed peak values, respectively;

a cross correlation coefficient calculation unit calculating a correlation value between the filtered first and second histograms; and

a decision unit outputting a scene change signal by comparing the correlation value with a third threshold, and a TI (Title Insertion) or PIP (Picture In Picture) signal based on the scene change signal and the average signal and the maximum signal output from the comparison unit

.

9. The scene change detector according to claim 8, further comprising

first and second frame buffers storing two image frame data to detect a scene change; and

first and second color space conversion units converting the image frame data stored in the first and second frame buffers into the first and second color signals and outputting the first and second color signals to the first and second histogram detection units, respectively.

10. The scene change detector according to claim 9, wherein the first and second color signals are luminance color signals.

11. The scene change detector according to claim 9, wherein the first and second color signals are chroma color signals.

12. The scene change detector according to claim 8, wherein the first and second histogram calculation units quantize the input first and second color signals to respective signal bands, each calculate the number of pixels having the same values of the quantized first and second color signals with respect to all pixels in respective frame regions, and calculate the first and second histograms by standardizing the calculated respective numbers, respectively.

13. The scene change detector according to claim 8, wherein the decision unit outputs the scene change signal when the correlation value is less than the third threshold.

14. The scene change detector according to claim 8, wherein the third threshold is in a range of 0.9 to 0.95 inclusive.

15. The scene change detector according to claim 13, wherein the comparison unit outputs the average signal when the difference between the first and second average values is greater than the first threshold, and the maximum signal when the difference between the first and second maximum values is greater than the second threshold.

16. The scene change detector according to claim 8, wherein the decision unit receives the average signal and the maximum signal and outputs the TI or PIP signal when the scene change signal is greater than the first threshold.

17. A method of detecting a scene change, the method comprising:

computing first and second histograms with respect to input first and second color signals, respectively;

calculating a correlation value between the first and second histograms; and

outputting a scene change signal when the correlation value is less than a threshold.

18. The method according to claim 17, wherein the computing of the first and second histograms comprises:

storing two image frame data separately to detect the scene change; and

converting the stored two frame data into the first and second color signals.

19. A method of detecting a scene change, the method comprising:

computing first and second histograms with respect to input first and second color signals;

calculating first and second average values and first and second maximum values from the first and second histograms, respectively;

outputting an average signal when a first difference between the calculated first and second average values is greater than a first threshold, and outputting a maximum signal when a second difference between the first and second maximum values is greater than a second threshold;

filtering the first and the second histograms to output the filtered first and second histograms having suppressed peak values;

calculating a correlation value between the filtered first and second histograms; and

outputting a scene change signal when the correlation value is less than a third threshold, and outputting a TI or PIP signal when the correlation value is greater than the third threshold with the average and maximum signals being inputted thereto.

20. The method according to claim 19, wherein the computing of the first and second histograms comprises:

storing two image frame data separately to detect the scene change; and

converting the stored two image frame data into the first and second color signals.

21. A scene change detector comprising:

first and second histogram detection units each computing each number of respective pixels having the same value from first and second video signals, respectively; and

a decision unit outputting a scene change signal in accordance with the number of the pixels of each of the first and second video signals.

22. The scene change detector according to claim 21, wherein the first and second video signals have a temporal interval in video stream data.

23. The scene change detector according to claim 21, wherein the first and second video signals comprise:

one of an RGB type signal, a YIQ type signal, a YUV type signal, a YcbCr type signal,

and an HLS type signal.

24. The scene change detector according to claim 21, further comprising:

first and second memories storing the first and second video signals, respectively.

25. The scene change detector according to claim 21, further comprising:

first and second memories storing first and second image frame/field data of video stream data corresponding to the first and second video signals, respectively.

26. The scene change detector according to claim 25, further comprising:

first and second color space conversion units converting the stored first and second image frame/field data of video stream data into the first and second video signals, respectively.

27. The scene change detector according to claim 21, wherein the first and second histogram detection units compute first and second histograms representing respective numbers of the respective pixels having the same value from first and second video signals, respectively.

28. The scene change detector according to claim 27, wherein each of the first and second histograms comprises:

first numbers each representing the number of the pixels having the same value; and

second numbers each representing the number of the pixels having different values.

29. The scene change detector according to claim 28, wherein decision unit outputs the scene change signal in accordance with the first numbers and the second numbers.

30. The scene change detector according to claim 27, further comprising:

a cross correlation coefficient calculation unit calculating a correlation value between the first and the second histograms, wherein the decision unit outputs the scene change signal upon comparing the correlation value with a threshold.

31. The scene change detector according to claim 21, further comprising:

first and second filters filtering the respective numbers of the pixels having the same value to suppress one of the respective numbers of the pixels which is greater than a peak

value, respectively.

32. The scene change detector according to claim 21, wherein the first and second histogram detection unit computes another number of the respective pixels having different values, respectively, and the decision unit outputs the scene change signal in accordance with the number and the another number of the pixels of each of the first and second video signals.

33. The scene change detector according to claim 21, wherein the first and second histogram detection units compute another number of the respective pixels having different values, respectively, the number and the another number of the pixels are normalized in first and second ranges, respectively, and the decision unit outputs the scene change signal in accordance with the normalized number and the normalized another number of the pixels.

34. The scene change detector according to claim 21, wherein the first and second histogram detection units compute another number of the respective pixels having different values, and the detector further comprises:

first and second average/maximum calculation units calculating first and second average signals and first and second maximum signals from the number of the pixels, respectively.

35. The scene change detector according to claim 34, wherein the decision unit outputs the scene change signal in accordance with the first and second average signals and the first and second maximum signals of the first and second average/maximum calculation units.

36. The scene change detector according to claim 34, wherein the number and the another number of the pixels are normalized in first and second ranges, respectively.

37. The scene change detector according to claim 36, wherein the first range is N times of a scale between 1 and 100 inclusive, and N is a positive number.

38. The scene change detector according to claim 36, wherein the second range is N times of a scale between 0 and 255, inclusive, and N is a positive number.

39. The scene change detector according to claim 34, wherein the number of the

pixels has a maximum number of 100 when the number of the pixels is in a scale between 1 and 100 inclusive.

40. The scene change detector according to claim 34, wherein the another number of the pixels has a maximum number of 255 when the number of the pixels is in a scale between 0 and 255 inclusive.

41. The scene change detector according to claim 21, wherein the respective pixels have one of a second number of different values, and the detector further comprises:

a cross correlation coefficient calculation unit calculating a correlation value between the first and second video signals in the respective numbers of the respective pixels corresponding to the second number of different values.

42. The scene change detector according to claim 41, wherein the decision unit outputs the scene change signal upon comparing the correlation value with a threshold.

43. The scene change detector according to claim 42, wherein the scene change signal represents that there is a scene change between the first and second video signals, when the correlation value is less than a threshold.

44. The scene change detector according to claim 42, wherein the scene change signal represents that there is a title insertion signal or a picture-in-picture signal in the first and second video signals, when the correlation value is greater than a threshold.

45. The scene change detector according to claim 21, wherein the respective pixels are a portion of or all pixels forming a frame or field corresponding the first and second video signals, respectively.

46. A scene change detector comprising:

first and second histogram detection units forming correlation information between histograms of a chroma or luminance color signal and detecting a scene change unrelated to a movement in an image frame from the formed correlation information; and

a decision unit outputting a scene change signal in accordance with the detected scene change.

47. A method in a scene change detector, the method comprising:

computing respective numbers of respective pixels having the same value from first and second video signals, respectively; and

outputting a scene change signal in accordance with the respective numbers of the pixels of the first and second video signals.

48. The method of claim 47, wherein the respective numbers comprises the second number of the pixels having different values, and the computing of the number of the respective pixels comprises:

calculating a correlation value between the first and second video signals in the respective numbers of the respective pixels corresponding to the second number of different values.

49. The method of claim 47, wherein the outputting of the scene change signal comprises:

comparing the correlation value with a threshold to output the scene change signal representing one of a scene change and a title insertion or picture-in-picture signal in the first and second video signals.

50. A method in a scene change detector, the method comprising:

detecting a scene change unrelated to a movement in an image frame by using correlation information between histograms of a chroma or luminance color signal; and

outputting a scene change signal in accordance with the detected scene change.